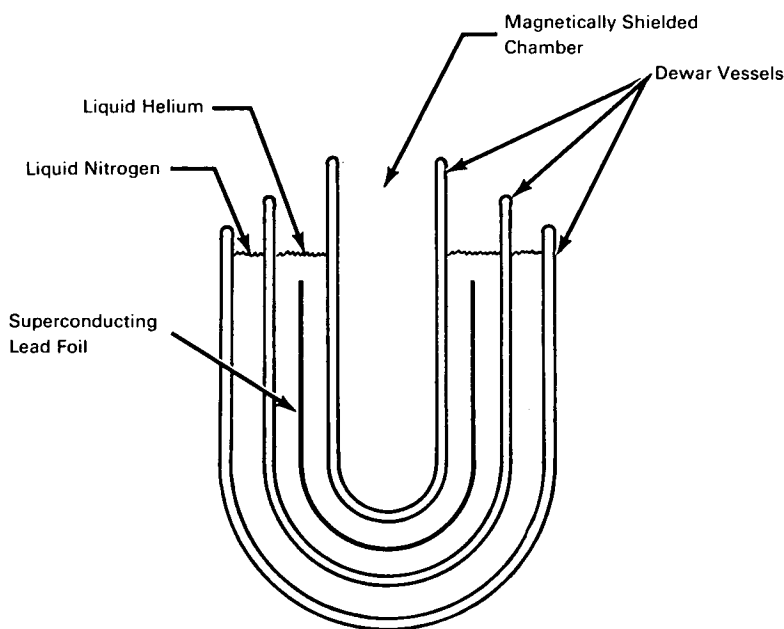


# NASA TECH BRIEF



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## Superconductor Shields Test Chamber From Ambient Magnetic Fields



**The problem:** Constructing an inexpensive test chamber that maintains a constant, low magnetic field.

**The solution:** A test chamber that is shielded from ambient magnetic fields by a lead foil cylinder maintained in a superconducting state by liquid helium.

**How it's done:** The lead cylinder, constructed of 0.007-inch-thick foil, is suspended in a Dewar vessel filled with liquid helium to cool the lead to a superconducting state. A current is induced in the lead foil cylinder by the application of a very small magnetic

field (less than  $2 \times 10^{-5}$  gauss) during the cooling process. The central space within this Dewar system then encloses the initially applied small magnetic field at a constant value even in the presence of steady or changing ambient magnetic fields.

### Notes:

1. The internal field of this device has been demonstrated to be axially stable to better than  $\pm 1$  gamma ( $10^{-5}$  gauss)  $\pm 2$  gamma in an ambient field of 500 gamma.
2. This innovation should be useful as a laboratory research and testing device for magnetic components.

(continued overleaf)

3. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Jet Propulsion Laboratory  
4800 Oak Grove Drive  
Pasadena, California, 91103  
Reference: B65-10297

**Patent status:** NASA encourages commercial use of this innovation. No patent action is contemplated by NASA.

Source: A. F. Hildebrandt  
(JPL-627)